

Product Name:	G418 Disulfate
Product Number:	G001
CAS Number:	108321-42-2
Molecular Formula:	$C_{20}H_{40}N_4O_{10} \cdot 2H_2SO_4$
Molecular Weight:	692.71
Form:	Powder
Appearance:	White or off-white powder
Solubility:	Water: 100mg/mL (clear and complete)
Source:	<i>Micromonospora rhodorangea</i>
Biological Assay:	ED ₅₀ Resistant: ≥2500 ug/mL ED ₅₀ Sensitive: ≤400 ug/mL
Elemental Analysis:	Carbon: 28.80-36.07% Hydrogen: 5.76-7.76% Nitrogen: 6.72-8.41% Water of Hydration: 0-6
Ammonia:	≤1.0%
Water Content (Karl Fischer):	≤12.0%
Potency (on a dry basis):	≥720 µg/mg (≥700 µg/mg As is)
Absorbance:	1mg/mL:280nm <0.015 100mg/mL: 570nm <0.10
pH:	4.6-6.0 (200mg/mL)
Optical Rotation:	+104° to +121°
Storage Conditions:	Ambient
Description:	G418 Disulfate (syn: Geneticin; G418 sulfate) is routinely used for gene selection in cell culture. G418 Disulfate is an aminoglycoside antibiotic isolated from <i>Micromonospora rhodorangea</i> and closely related to Gentamicin. We also offer:

- G418 Disulfate Solution (50 mg/ml) in Water (G020-G021)
- G418 Disulfate, EvoPure (G030)
- G418 Disulfate, (Low Endotoxin) (G048)

Mechanism of Action:	G418 Disulfate, and other aminoglycosides prevent protein synthesis. Resistance to G418 Disulfate is conferred by the <i>neo</i> gene (neomycin resistant gene) from either Tn5 or Tn601 (903) transposons. Cells successfully transfected with resistance plasmids containing the <i>neo</i> resistance gene can express aminoglycoside 3'-phosphotransferase (APT 3' I or APT 3' II) which covalently modifies G418 to 3-phosphoric G418, which has negligible potency and has low-affinity for prokaryotic and eukaryotic ribosomes.
Spectrum:	G418 Disulfate is toxic to susceptible bacteria, fungi, yeast, protozoa, helminths, mammalian cells, and plants.
Microbiology Applications	G418 Disulfate is used as a gene selection agent during transfection of eukaryotic cells.
References:	<p>Aragão FJL and Brasileiro ACM (2002) Positive, negative and marker-free strategies for transgenic plant selection. <i>Braz. J. Plant Physiol.</i> 14(1):1-10</p> <p>Davis, BD (1987) Mechanism of bactericidal action of aminoglycosides. <i>Microbiol. Rev.</i> 51(3):341-50</p> <p>Delrue I, Pan Q, Baczmanska AK, Callens BW and Verdoodt LLM (2018) Determination of the selection capacity of antibiotics for gene selection. <i>Biotechnol. J.</i> 13(8):1700747 PMID 29436782</p> <p>Lin-Cereghino, J et al (2008) Direct selection of <i>Pichia pastoris</i> expression strains using new G418 resistance vectors. <i>Yeast</i> 25:293-99.</p> <p>Shin, Y (2007) Selection of NptII transgenic sweetpotato plants Using G418 and paromomycin. <i>J. Plant Biol.</i> 50(2):206-12</p>

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